

REMARKS

This Reply is in response to the Non-Final Office Action mailed on December 12, 2006 in which claims 19, 23, 25, 27-33, 43 and 47 were allowed; in which claims 3, 5-7, 9-13, 15-16, 18, 46 and 48-50 were objected to and in which claims 1, 2, 8, 17, 34-37, 39-42 and 50 1-55 were rejected. With this response, claims 48 and 55 are canceled; claims 1, 17, 40, 41, 42 and 54 are amended; and claims 56-57 are added. Claims 1-3, 5-13, 15-19, 23, 25, 27-37, 39-43, and 46-47, 49-54 and 56-57 are presented for reconsideration and allowance.

I. Examiner Interview Summary

On March 9, 2007, a telephonic interview was held between Examiner Pape and Applicants' attorney, Todd A. Rathe. The rejection of claims 39 and 41 were discussed. In particular, the meaning of the expression "opposite to opposite sides" was discussed. Although no agreement was reached, Applicants wish to thank Examiner Pape for the opportunity to discuss the rejections.

II. Examiner's Note

Page 2 of the Office Action noted that the previous response indicated that claim 43 was amended to incorporate the limitations of claim 44; however, such amendments to claim 43 were not properly indicated with underlined text. With this response, claim 43 is amended by once again incorporating the limitations of former claim 44 into claim 43, wherein such amendments to claim 43 are now properly underlined.

III. Rejection of Claim 4 under 35 USC 112, Second Paragraph

Section 2 of the Office Action rejected claims 17 and 54 under 35 USC 112, second paragraph. Claim 17 is amended to replace the "fourth device" with -- first device --. Claim 54 is amended to reciting that the second heat sink has fins come providing proper antecedent basis for the subsequent limitation. Accordingly, claim 17 and 54, as amended, overcome rejection under 35 USC 112, second paragraph.

IV. Rejection of Claims 1-2, 8, 17, 39, 40 and 55 under 35 USC 102(b) Based upon Patel

Section 3 of the Office Action rejected claims 1-2, 8, 17, 39, 40 and 55 under 35 USC 102(b) as being anticipated by Patel US Patent 5,396,403. Claim 55 is canceled. Claims 1-2, 8, 17, 39, and 40, as amended, overcome the rejection based upon Patel.

A. Claim 1

Section 6 of the Office Action indicated that claim 48 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In response, claim 48 is canceled with its limitations incorporated into base claim 1. Accordingly, claim 1, as amended, overcomes the rejection based upon Patel and is believed to be in condition for allowance. Claims 2, 8, and 17 depend from claim 1 and are believed to be in condition for allowance for at least the same reasons.

B. Claim 39

Claim 39 recites a heat dissipating arrangement having a first heat emitting device, a second heat emitting device in a first heat sink having been thermally coupled to the first device. The fins of the first heat sink overlap and extend opposite to opposite sides of the second device.

Patel fails to disclose an arrangement having first and second heat emitting devices, were in a first heat sink having fins thermally coupled to the first device overlap and extend opposite to opposite sides of the second device. In contrast, Figure 4 of Patel discloses either a first heat sink 75 or a second heat sink 83. The fins of heat sink 75 do not extend opposite to opposite sides of any heat emitting device. Likewise, the fins of heat sink 83 do not extend opposite to opposite sides of any heat emitting device. Applicants further note that the previous rejection of claim 40 had to characterize heat sinks 75 and 83 as distinct first and second heat sinks in order to reject a former claim 40. Accordingly, the rejection of claim 39 based upon Patel should be withdrawn. Claim 40 depends from claim 39 and overcomes the rejection for the same reasons.

C. Claim 40

Claim 40 depends from claim 39. Claim 40, as amended, recites that the second heat sink is thermally coupled to the second device and at the fins of the first heat sink further extend opposite to opposite sides of a second heat sink.

Patel fails to disclose fins of a first heat sink that extend opposite to opposite side of a second heat sink. As shown by Figure 4 of Patel, fins of heat sink 75 do not extend opposite to opposite sides of heat sink 83. Likewise, fins of heat sink 83 do not extend opposite to opposite sides of heat sink 75. Accordingly, claim 40 overcomes rejection based upon Patel for this additional reason.

V. Rejection of Claims 41-42 and 54 under 35 USC 102(b) Based on DiBene

Page 5 of the Office Action rejected claims 41-42 and 54 under 35 USC 102(b) as being anticipated by DiBene, II et al. US Patent 6,356,448. Claim 41, 42 and 54, as amended, overcome the rejection based upon DiBene.

A. Claim 41

Claim 41, as amended, recites a first heat sink comprising a heat dissipating structure having fins configured to be thermally coupled to a first heat emitting device while extending at least partially around and opposite to opposite sides of a second heat sink which is coupled to a second heat emitting device.

DiBene fails to disclose or suggest a heat sink having fins configured to be thermally coupled to a first heat emitting device, wherein the fins extend at least partially around and opposite to opposite sides of a second heat sink thermally coupled to a second heat emitting device. In contrast, neither fins 144 nor the material between plated through holes 168 (characterized by the Office Action as fins) extend opposite to opposite sides of one another. Accordingly, claim 41, as amended, overcomes rejection based upon DiBene.

B. Claim 42

Claim 42, as amended, recites a heat sink comprising at least one heat dissipating structure configured to be thermally coupled to a first heat emitting device while extending at least partially around and opposite to opposite sides of a plurality of fins of a second heat sink thermally coupled to a second heat emitting device.

DiBene fails to disclose or suggest a heat displaying structure which extends at least partially around and opposite to opposite sides of fins associated with another heat sink. Heat sink 142 of DiBene does not extend at least partially around and opposite to opposite sides of the material between plated through holes 168 (characterized by the Office Action as fins).

C. Claim 54

Claim 54 depends from claim 41 and is patentably distinct over the prior art of record for the same reasons discussed above with respect to claim 41.

Claim 54, as amended, further recites that the at least one heat dissipating structure having fins is configured to extend at least partially around and opposite to opposite sides of a second heat sink having fins. Heat sink 142 of DiBene does not extend at least partially around and opposite to opposite sides of the material between plated through holes 168 (characterized by the Office Action as fins). Accordingly, claim 54 overcomes the rejection based upon DiBene for this additional reason.

VI. Rejection of Claim 34-37, 39-40 and 51-53 under 35 USC 103(a) Based upon Applicants Admitted Prior Art (AAPA) and DiBene

Page 6 of the Office Action rejected claims 34-37, 39-40 and 51-53 under 35 USC 103(a) as being unpatentable over AAPA in view of DiBene, II et al. US Patent 6,356,448. Claims 34-37, 39-40 and 51-53, as amended, overcome the rejection.

A. Claim 34

Claim 34 recites a processor module which includes a first heat sink overlapping a power pod and a second heat sink extending at least partially across and over the first heat sink.

Neither AAPA nor DiBene, alone or in combination, disclose or suggest a processor module having a first heat sink that overlaps a power pod and a second heat sink that extends at least partially across and over the first heat sink. AAPA merely acknowledges the existence of a first heat sink that overlaps a power pod and a second heat sink connected to a processor. The Office Action acknowledges that AAPA is silent as to the second heat sink extending at least partially across and over the first heat sink. As a result, the Office Action attempts to additionally rely upon DiBene.

However, DiBene does not satisfy the deficiencies AAPA. Like AAPA, DiBene also discloses a heat sink that overlaps a power pod and another heat sink connected to a processor. Nowhere does DiBene disclose or suggest that a heatsink that is connected to the processor should extend over the heatsink that extends over the power pod. In other words, nowhere does DiBene disclose that the material between plated through holes 168 (characterized by the Office Action as a heatsink) extends over heatsink 142 (the heatsink that extends over power pod 118).

In rejecting claim 34, the Office Action seems to overlook the specific limitations of what heatsink is extending across the other heatsink. In rejecting claim 34, the Office Action asserts, "DiBene teaches the conventionality of having a heatsink (142) extend at least partially across in other heatsink (comprising 106, 126, and 128)." However, claim 34 does not simply state that one heatsink extends across another heatsink. Rather, claim 34 specifically recites that the heatsink that is thermally coupled to be heat transfer surface of the processor extends at least partially across and over the heatsink that overlaps and is thermally coupled to the power pod. The heatsink of DiBene that is thermally coupled to the processor (comprising 106, 126, and 128) clearly does not extend over the heatsink 142 that overlaps power pod 118. Thus, rejection of claim 34 should be withdrawn. Claims 35 and 36 depend from claim 34 and overcome the rejection for the same reasons.

B. Claims 35 and 36

Claims 35 and 36 depend from claim 34. Claim 35 recites at the second heatsink extends completely across the first heatsink. Claim 36 recites that the second heatsink extends on opposite sides of the first heatsink.

Neither AAPA nor DiBene, alone or in combination, disclose or suggest the additional limitations of claims 35 and 36. In rejecting claims 35 and 36, the Office Action asserts that DiBene teaches that "the second heatsink (142) extends completely across the first heatsink (106, 126, 128, See Fig 2)." With respect to claim 36, the Office Action asserts that "DiBene et al. further teaches that the second heatsink extends on opposite sides of the first heatsink (See Fig 2).

However, the Examiner's characterization of the heatsink 142 of DiBene as the "second heatsink" of claim 35 and 36 is improper. Applicants respectfully note that claim 34, from which claims 35 and 36 depend, recites that the "first heatsink" overlaps the power pod. The only heatsink disclosed by DiBene that overlaps the power pod 118 is heatsink 142. The other "heatsink" of DiBene, (106, 126, 128), clearly does not overlap power pod 118. Thus, heatsink 142 cannot be properly characterized as the "second heatsink" in order to reject claim 35 and 36. The only heatsink of DiBene that could be possibly characterized as the second heatsink would be "heatsink" (106, 126, 128). However, this heatsink clearly does not extend completely across heatsink 142. Nor does this heatsink extend on opposite sides of the heatsink 142. Thus, the rejection of claim 35 and 36 should be withdrawn for this additional reason.

C. Claim 37

Claim 37 recites a multi-device heatsink module including a power supply, a processor, a first means for dissipating heat emitted by the power supply while not substantially receiving heat from the processor and a second mean for dissipating heat emitted by the processor. The second means extends at least partially across and over the first means. In other words, the

means for dissipating heat from the processor extends at least partially across and over the means for dissipating heat emitted by the power supply.

Neither AAPA nor DiBene, alone or in combination, disclose or suggest a second means for dissipating heat emitted by a processor that extends over a first means for dissipating heat emitted by a power supply while not substantially receiving heat from the processor. As with claim 34, the Office Action, in rejecting claim 34, seems to overlook the specific limitations of what heatsink is extending across the other heatsink. In rejecting claim 37, the Office Action asserts, "DiBene teaches the conventionality of having a heatsink (142) extend at least partially across in other heatsink (comprising 106, 126, and 128)."

However, claim 37 does not simply state that one heatsink extends across another heatsink. Rather, claim 37 specifically recites that the heatsink (second means for dissipating heat) that is thermally coupled to be heat transfer surface of the processor extends at least partially across and over the heatsink (first heat dissipating means) that dissipates heat emitted by the power supply while not substantially receiving heat from the processor. The heatsink of DiBene that is thermally coupled to the processor (comprising 106, 126, and 128) clearly does not extend over the heatsink 142 that dissipates heat emitted by the power supply 118.

The heatsink (comprising 106, 126, and 128) cannot be alternatively characterized as the "first means for dissipating heat" while he think 142 is alternatively characterized as the "second means for dissipating heat" since the heatsink (comprising 106, 126, and 128) clearly does not dissipate heat emitted by a power supply while not substantially receiving heat from the processor. Thus, rejection of claim 37 should be withdrawn.

D. Claim 39

Claim 39 recites a heat dissipating arrangement including a heat sink having fins thermally coupled to a first device that overlap and extend opposite to opposite sides of a second device.

Neither AAPA nor DiBene, alone or in combination, disclose or suggest a heatsink having fins that overlap and extend opposite to opposite sides of a second heat emitting device. AAPA merely discloses a first heatsink coupled to a first device and a second heatsink coupled to a second device. The Office Action acknowledges that AAPA failed to disclose fins a first device overlapping and extending opposite to opposite sides of a second device. As a result, the Office Action attempt to additionally rely upon DiBene to satisfy this deficiency of AAPA. The Office Action asserts that:

DiBene teaches the conventionality of having a first heatsink (142) overlapping and extending cops to opposite side to second heatsink (Comprising 106, 126, and 128).

(Office Action, Page 8).

However, rejection is incorrect for two reasons. First, Applicants respectfully note that claim 39 does not recite a first heatsink overlapping and extending opposite to opposite sides of a second heatsink. Rather, claim 39 recites that the first heatsink has fins that overlap and extend opposite to opposite sides of the second heat emitting device.

Second, things 144 of heatsink 142 do not overlap and extend opposite to opposite sides of either another heatsink or another electronic device. Fins 144 of heatsink 142 do not overlap and extend opposite to opposite side of heatsink (106, 126, and 128). Moreover, fins 144 of heatsink 142 do not overlap and extend opposite to opposite sides of a second one or heat emitting device (108) while being thermally coupled to a first heat emitting device (118). Accordingly, the rejection of claim 39 based upon AAPA and DiBene should be withdrawn. Claim 40 depends from claim 39 and overcomes the rejection for the same reasons.

E. Claim 40

Claim 40 depends from claim 39. Claim 40, as amended, further recites a second heatsink thermally coupled to a second device, wherein the first heatsink extend opposite to opposite sides of the second heatsink.

Neither AAPA nor DiBene, alone or in combination, additionally disclosed a second heatsink, wherein the first heatsink extends opposite to opposite sides of the second heatsink. Neither heatsink 142 nor heatsink (106, 126, and 128) of DiBene extend opposite to opposite sides of the other. Accordingly, claim 40, as amended, overcomes the rejection based upon AAPA and DiBene for this additional reason. Claim 53 depend from claim 40 and overcomes the rejection for the same reasons.

F. Claim 51

Claim 51 depends from claim 34 and further recites at the first heatsink is sandwiched between the processor and the second heatsink.

Neither AAPA nor DiBene, alone or in combination, disclose a processor module of claim 34, wherein the first heatsink is additionally sandwiched between the processor and the second heatsink. In rejecting claim 51, the Office Action states:

With respect to claims 51-53, DiBene et al. further teaches a first heatsink (Comprising 106, 126, 128) sandwiched between a processor (108) and a second heatsink (142).

(Office Action, Page 8).

Although it may be true that the heatsink (Comprising 106, 126, 128) is sandwiched between a processor (108) and a heatsink (142), Applicants respectfully note that this characterization of the heatsink (Comprising 106, 126, 128) as the "first heatsink" is improper. Claim 34, from which Claim 51 depends, requires that the first heatsink overlap the power pod. As clearly illustrated by the Figures of DiBene, the heatsink (Comprising 106, 126, 128) does not overlap power pod 118. Per the limitations of claim 51, the "first heatsink" (1) overlaps the power pod and (2) is sandwiched between the processor and the second heatsink. The heatsink (Comprising 106, 126, 128) does not meet both these limitations. Accordingly, the rejection of claim 51 is improper and should be withdrawn.

G. Claim 52

Claim 52 depends from claim 37 and further recites that the first means for dissipating heat is sandwiched between a second mean for dissipating heat and the power supply.

In rejecting claim 52, the Office Action states:

With respect to claims 51-53, DiBene et al. further teaches a first heatsink (Comprising 106, 126, 128) sandwiched between a processor (108) and a second heatsink (142).

(Office Action, Page 8).

However, Applicants respectfully note that claim 52 does not recite a heatsink sandwiched between a processor and another heatsink. Rather, claim 52 recites a heatsink or means for dissipating heat sandwiched between a power supply and another heatsink. DiBene does not disclose any heatsink sandwiched between power supply 118 and heatsink 142. Accordingly, rejection of claim 52 should be withdrawn for this additional reason.

VII. Added Claims

With this response, Claims 56 and 57 are added. Claims 56 and 57 are presented for consideration and allowance.

A. Claim 56

Claim 56 depends from claim 34 and further recites that the second heat sink includes: a first base thermally coupled to the second heat transfer surface; and a first array of fins thermally coupled to the first base so as to extend away from the first base in a first direction, wherein the first array of fins includes consecutive fins forming a transverse channel therebetween extending in a second direction perpendicular to the first direction and having opposite transverse open ends; and wherein the first heat sink includes: a second base thermally coupled to the first heat transfer surface; and a second array of fins coupled to the second base, wherein the second array of fins extend away from the second base in the first direction, wherein the second array of fins includes consecutive fins forming a transverse channel therebetween extending in a third

direction perpendicular to the first direction and having opposite transverse open ends. The prior art of record fails to disclose these additional limitations. Accordingly, claim 56 is presented for consideration and allowance.

B. Claim 57

Section 6 indicated that claim 46 would be allowable since the prior art of record fails to disclose the limitations of claims 1 and 46. Claim 46 is rewritten in independent form as added claim 57 except that added claim 57 is alternatively directed to a multi-device heatsink module adapted to be connected to a circuit board rather than a computing system that additionally includes a circuit board. Accordingly, added claim 57 is believed to be patentably distinct over the prior art of record and is presented for consideration and allowance.

VIII. Conclusion

After amending the claims as set forth above, claims 1-3, 5-13, 15-19, 23, 25, 27-37, 39-43, and 46-47, 49-54 and 56-57 are now pending in this application.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 08-2025. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 08-2025. If any extensions of time are needed for timely acceptance of papers

submitted herewith, Applicants hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 08-2025.

Respectfully submitted,

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